

US EPA ARCHIVE DOCUMENT

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

RCRA Corrective Action Environmental Indicator (EI) RCRIS code (CA725)

Interim Final 2/5/99
with revision signed 6/20/05

Current Human Exposures Under Control

Facility Name: Stewart Warner Corporation – Former Southwind Facility
Facility Address: 1514 Drover Street, Indianapolis, Indiana
Facility EPA ID #: IND 005 213 715

1. Has all available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been considered in this EI determination?

X If yes – check here and continue with #2 below.
NA If no – re-evaluate existing data, or
NA If data are not available skip to #6 and enter “IN” (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of “Current Human Exposures Under Control” EI

A positive “Current Human Exposure Under Control” EI determination (“YE” status code) indicates that there are no “unacceptable” human exposures to “contamination” (i.e., contaminants in concentrations in excess of appropriate risk-based levels) that can be reasonably expected under current land- and groundwater-use conditions (for all “contamination” subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GRPA). The “Current Human Exposure under Control” EI are for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and do not consider potential future land-or groundwater-use conditions or ecological receptors. The RCRA Corrective Action program’s overall mission to protect human health and environment requires that Final remedies address these issues (i.e., potential future human exposure scenarios, future land and groundwater uses, and ecological receptors).

Duration/Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

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2. Are groundwater, soil, surface water, sediments, or air media known or reasonably suspected to be "contaminated"¹ above appropriately protective risk-based "levels" (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action (from SWMUs, RUs or AOCs)?

	<u>Yes</u>	<u>NO</u>	<u>?</u>	<u>Rationale/Key Contaminants</u>
Groundwater	<u>X</u>	<u> </u>	<u> </u>	Groundwater samples collected at and in the vicinity of the site contain elevated VOCs.
Air (indoors) ²	<u>X</u>	<u> </u>	<u> </u>	Off-site basements/crawl spaces contain low concentrations of VOCs.
Surface Soil (e.g., <2 ft)	<u> </u>	<u>X</u>	<u> </u>	There is no surface soil since 50% of site is covered by concrete building foundations, asphalt, concrete, and crushed stone.
Surface Water	<u> </u>	<u>X</u>	<u> </u>	Water quality is not impaired in the White River.
Sediment	<u> </u>	<u>X</u>	<u> </u>	
Subsurface Soil (e.g., >2 ft)	<u>X</u>	<u> </u>	<u> </u>	Subsurface samples: VOCs and metals
Air (outdoors)	<u> </u>	<u>X</u>	<u> </u>	Facility no longer in operation; SVE/AS Interim Measures system is below permitting thresholds for VOCs.

 NA If no (for all media) – skip to #6, and enter "YE," status code after providing or citing appropriate "levels", and referencing sufficient supporting documentation demonstrating that these "levels" are not exceeded.

 X If yes (for any media) – continue after identifying key contaminants in each "contaminated" medium, citing appropriate "levels" (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.

 If unknown (for any media) – skip to #6 and enter "IN" status code.

Rationale and Reference(s): (see next page)

¹ "Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriately protective risk-based "levels" (for the media, that identify risks within the acceptable risk range).

² Recent evidence (from the Colorado Dept. of Public Health and Environment, and others) suggest that unacceptable indoor air concentrations are more common in structures above groundwater with volatile contaminants previously believed. This is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration necessary to be reasonably certain that indoor air (in structures located above (and adjacent to) groundwater with volatile contaminants) does not present unacceptable risks.

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Groundwater

A groundwater monitoring well network consisting of 24 wells has been established on-site and in adjacent off-site areas as part of the RCRA Facility Investigation (RFI) activities (August Mack Environmental- (consultants for Stewart-Warner Corp.),- reports dated 2001, 2005). Results from the RFI sampling effort reveals concentrations of several volatile organic compound (VOCs) constituents above Indiana Department of Environmental Management (IDEM) Risk Integrated System of Closure (RISC) Industrial Default Closure Levels (IDCLs), including tetrachloroethene (or perchloroethene, PCE), trichloroethene (TCE), and vinyl chloride (VC). In addition, several other constituents including cis-1,2-dichloroethene (cis-1,2-DCE), 1,1-dichloroethane (1,1-DCA), 1,2-dichloroethene (1,1-DCE), and 1,1,1-trichloroethane (1,1,1-TCA) have been detected in the monitoring wells. A summary of groundwater sampling results is provided in the Phase II RFI Report.(Feb. 2005).

Groundwater elevation data from the monitoring well network reveals that groundwater at and in the vicinity of the site flows in a northwesterly direction towards four high-capacity dewatering wells operated by the adjacent Eli Lilly & Company (Lilly) facility. The Lilly wells withdraw approximately 4.2 million gallons of groundwater per day (Mundell & Associates, 2005) to dewater the basement areas of their buildings. Based on the groundwater level data, and a review of groundwater modeling information provided by Mundell (1999, 2005), all groundwater from the Stewart Warner site is completely captured by the Lilly dewatering wells.

Lilly has previously provided Stewart Warner with sampling results from the NPDES discharge point and the dewatering wells (Lilly, 1999). These historical data revealed VOCs in the Lilly wells, with the principal VOCs being PCE and TCE. Comparison of these results to the RISC IDCLs reveals PCE and TCE above RISC IDCLs. Table 1 below provides a list of the constituents detected at concentrations above the IDEM RISC IDCLs in the Stewart Warner monitoring well network, and the Lilly wells.

TABLE 1

Analyte ¹	IDEM RISC Industrial Default Closure Level (ug/l) ²
Tetrachloroethylene	55
Trichloroethene	260
Vinyl Chloride	2
Cis-1,2-dichloroethene	1,022

1. Analytes detected in monitoring well network or Lilly well above IDEM RISC Default Closure Levels.
2. Indiana Department of Environmental Management, Risk Integrated System of Closure, Default Closure Table, July 14, 2003

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Air (Indoors)

There are no indoor air concerns at the site since Stewart Warner no longer has any buildings on-site. One of the Interim Measures (IM) tasks required in the U.S. EPA RCRA Section 3008(h) Second Modified Administrative Order (Order) issued to Stewart Warner (August 15, 2003) was to evaluate the potential for impacts to indoor air in the residential study area immediately downgradient of the Stewart Warner property (area bounded by York Street and Nordyke Avenue – Study Area 1). A figure depicting the site and surrounding area is provided as Figure 1 in Attachment A, and a figure depicting the residential study area is provided as Figure 2 in Attachment A. In accordance with the approved IM Work Plan (August Mack, 2003), this media was evaluated first by conducting a subsurface investigation that included soil gas sampling in rights-of-way in Study Area 1. Results from this investigation were compared to generic screening criteria provided in Table 2b of the U.S. EPA Draft Vapor Intrusion Guidance (U.S. EPA, 2002). These data indicated that PCE and TCE were present in soil gas at concentrations exceeding the generic criteria identified above. Based on these results, additional investigation was conducted in the area north and east of Study Area 1 (identified as Study Area 2).

As a result of these soil gas findings, August Mack worked closely with the Marion County Health Department (MCHD) and sought permission from homeowners to sample basements within the area identified during the soil gas investigation in Study Areas 1 and 2. A total of 17 basements and 4 crawl spaces were sampled for VOCs, and based on these results, 14 basements/crawlspaces contained PCE and/or TCE concentrations above the **Preliminary Target Screening Levels (PTSLs)** for indoor air established for the site (refer to the IM Report, December 13, 2004, and Status Report #9, May 10, 2004). Table 2 below provides the generic soil gas screening criteria and the PTSLs for Indoor Air.

TABLE 2

Analyte	Target Deep Soil Gas Concentration Corresponding to Target Indoor Air Concentrations (ppbv) ¹	Preliminary Indoor Air Target Screening Levels (PTSLs) (ppbv) ²
Tetrachloroethene	120	1.2
Trichloroethene	4.1	1.44

1. Derived from Table 2b in the U.S. EPA Draft Vapor Intrusion Guidance (November, 2002).

2. Preliminary Indoor Air Target Screening Levels (PTSLs) established previously in Status Report #9 (May 10, 2004), and based on Table 2b of the U.S. EPA Draft VI Guidance.

Subsurface Soils

As reported in the Phase II RFI Report, subsurface soil samples collected during the Phase I RFI (November 2000) and the Phase II RFI (January 2004), and previous data collected prior to the RFI work (pre-1999) were compared to IDEM RISC IDCLs and U.S. EPA Preliminary Remediation Goals for industrial soils (PRGs). This comparison revealed the presence of several VOC and inorganic constituents above these subsurface soil criteria. Table 3 below provides a list of the constituents that have been detected in soils at concentrations exceeding the IDEM RISC IDCLs or the U.S. EPA PRGs for industrial soil.

TABLE 3

Analyte	U.S. EPA Region 9 Industrial Soil PRG (mg/kg) ¹	IDEM RISC Industrial Default Closure Level (mg/kg) ²
Arsenic	260	20
Cadmium	450	77
Chromium	450	117
Lead	750	230
Cyanide	12,000	412
Tetrachloroethene	3.4	0.635
Trichloroethene	0.110	2.9
Vinyl chloride	0.750	0.013
1,1,1-trichloroethane	1,200	34.5
1,2-DCE (cis/trans)	150	5.8
1,1,2,2-tetrachloroethane	0.930	0.110

2. U.S.EPA Region 9 Preliminary Remediation Goals (PRGs) , Updated October 1,2002
3. IDEM, Risk Integrated System of Closure, Default Closure Table, July 14, 2003

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3. Are there **complete pathways** between "contamination" and human receptors such that exposures can be reasonably expected under the current (land-and groundwater-use) conditions?

Summary Exposure Pathway Evaluation Table

Potential Human Receptors (Under Current Conditions)

<u>Contaminated Media</u>	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food ³
Groundwater	No	No	No	No			No
Air (indoors)	Yes	No	No				
Soil (surface, e.g., <2 ft)	---	---	---	---	---	---	---
Surface Water	---	---			---	---	---
Sediment	---	---			---	---	---
Soil (subsurface e.g., >2 ft)				No			No
Air (outdoors)	---	---	---	---	---		

Instructions for Summary Exposure Pathway Evaluation Table:

1. Strike-out specific Media including Human Receptors' spaces for Media which are not "contaminated" as identified in #2 above.
2. enter "yes" or "no" for potential "completeness" under each "Contaminated" Media- Human Receptor combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations some potential "Contaminated" Media – Human Receptor combinations (Pathways) do not have check spaces ("___"). While these combinations may not be probable in most situations they may be possible in some settings and should be added as necessary.

_____ If no (pathways are not complete for any contaminated media-receptor combination) – skip to #6, and enter "YE" status code, after explaining and/or referencing condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze major pathways).

Yes _____ If yes (pathways are complete for any "Contaminated" Media – Human Receptor combination) – continue after providing supporting explanation.

_____ If unknown (for any "Contaminated" Media – Human Receptor combination) – skip to #6 and enter "IN" status code.

³ Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.)

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Rationale and Reference(s):

Groundwater

Groundwater in the largely industrial area in the vicinity of the Stewart Warner site is not utilized for drinking water. According to the Preliminary Assessment/Visual Site Inspection Report (TechLaw, 1998) there are no drinking water wells within a 2-miles radius of the site. Furthermore, as required in the U.S. EPA RCRA Section 3008(h) Second Modified Administrative Order (Order) issued to Stewart Warner on August 15, 2003, a house-to-house survey was conducted in the residential area in the vicinity of the site by August Mack and the MCHD. As reported in the Interim Measures Report, no wells were identified during this survey (August Mack, 2004). Based on these findings, there is no potential for direct ingestion of groundwater in the vicinity of the site.

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Surface Water

As indicated previously, there are no surface water sources on the Stewart Warner site. However, groundwater pumped by the nearby Lilly facility is ultimately discharged (after traveling through the City Storm sewer approximately 2,000 feet) to a 200-foot long, rip-rap lined channel located in a remote location along the White River floodplain east of the site. Although the actual concentrations of VOCs (PCE and TCE) are likely significantly lower in the outfall channel than at the Lilly NPDES sampling point (volatilization during conveyance through the City sewer), Task 5a of the Order required installation of a fence and signage along the outfall channel to eliminate the potential for direct contact and ingestion of this water. A chain-link fence and warning signs were installed in April 2004 (refer to IM Report for additional information). Based on completion of these activities, this potential exposure pathway has been eliminated.

Additionally, the nearest location along the White River for potable water withdrawal by the Indianapolis Water Company is White River Station located approximately 3 miles upstream (north) of the site. The White River in the vicinity of the site and for at least five miles downstream is not used as a drinking water source. Instead, the portion of the White River immediately downstream of the site is used for wastewater discharge (City of Indianapolis wastewater treatment plant (Belmont Plant)). In addition, the overall quality of the White River in this area is considered impaired due to impacts resulting from combined sewer overflows, industrial discharges, and other sources unrelated to the Stewart Warner site. As a result of these issues, the MCHD has maintained a non-contact advisory and fish consumption advisories for the White River in the vicinity of the downtown Indianapolis.

Subsurface Soil

Approximately 50 percent of the site remains covered with concrete foundations of the former buildings, while the remaining 50 percent of the site is covered primarily with asphalt, concrete, and small areas of crushed stone and debris (e.g., bricks and concrete building materials). A chain link fence surrounds the entire property, therefore, access to the site is limited. Other than for its present use as a storage yard and semi-truck parking lot, the property is inactive. Therefore, potential exposure to impacted subsurface soil on-site is negligible. As reported in the Phase II RFI Report, off-site soil impacts are not anticipated based on known historical information regarding site usage, and soil sampling data collected during the IM and RFI activities that indicated no suspected COC impacts above IDEM RISC Residential Direct Contact Criteria in off-site areas.

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4. Can the exposures from any of the complete pathways identified in #3 be reasonably expected to be "significant"⁴ (i.e., potentially "unacceptable" because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable "levels" (used to identify the "contamination"); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable "levels") could result in greater than acceptable risks?

_____ No If no (exposures can not be reasonably expected to be significant (i.e., potentially "unacceptable") for any complete exposure pathway) – skip to #6 and enter "YE status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to contamination" (identified in #3) are not expected to be "significant"

_____ If yes (exposures could be reasonably expected to be "significant" (i.e. potentially "unacceptable") for any complete exposure pathway) – continue after providing a description (of each potentially "unacceptable" exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to "contamination" (identified in #3) are not expected to be "significant".

_____ If unknown (for any complete pathway) – skip to #6 and enter "IN" status code.

Rationale and Reference(s):

Air (Indoor)

As indicated above, a total of 17 basements in the vicinity of the Stewart Warner site were sampled for VOCs. Results from these samples revealed that 10 basements in proximity to the site contained PCE and/or TCE concentrations above the PTSLS. All of these basements are small (less than approximately 400 square feet), and none of these are used for human habitation (used strictly for storage and utilities). Regardless, Stewart Warner sought permission to install vapor mitigation systems in the basements. All work was coordinated with the U.S. EPA and MCHD. As reported in the IM Report (August Mack, 2004), mitigation systems were installed in a total of seven basements between January 2004 and August 2004.

Results from sampling in 4 crawl spaces in the immediate vicinity of the Stewart Warner site revealed PCE and TCE concentrations above the PTSLS. Although there is no potential for human habitation of the crawl space areas, Stewart Warner requested permission to install mitigation systems in the crawl spaces of these homes. Further, 11 additional homes were identified for crawl space mitigation within Study Areas 1 and 2, as defined during the basement testing. Fourteen of the 15 homeowners agreed to permit installation of a mitigation system, and the 15th home is unoccupied and uninhabitable. To date, mitigation systems have been installed in 12 of the 14 crawl spaces, and Stewart Warner is attempting to schedule the installation of the remaining two systems.

⁴ If there is any question on whether the identified exposures are "significant" (i.e., potentially "unacceptable") consult a human health Risk Assessment specialist with appropriate education, training, and experience.

Stewart Warner also contacted personnel for the adjacent Lilly facility to determine if basement testing would be possible. According to Lilly personnel, all of the Lilly buildings in proximity to the Stewart Warner site (collectively called the Lilly Technology Center) are under positive pressure. Thus, there is no potential for vapor intrusion into the building areas (including basements).

Based on the information above, engineering controls are in-place that have addressed the indoor air exposure pathway and greatly reduced the potential for human exposure.

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6. Check the appropriate RCRIS status codes for the Current Human Exposures Under Control EI event code (CA 725), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (and attach appropriate supporting documentation as well as a map of the facility):

 X YE – Yes, "Current Human Exposures Under Control" has been verified. Based on a review of the information contained in this EI Determination, "Current Human Exposures" are expected to be " Under Control at the Stewart-Warner Corporation facility EPA ID # IND005213715, located at 1514 Drover Street, Indianapolis, Indiana under current and reasonably expected conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.

 NA NO – "Current Human Exposures" are NOT "Under Control."

 NA IN – More information is needed to make a determination.

Completed by
N NEMANI

(signature) *N. Nemani*

(print) N NEMANI

(title) CORR. ACTION PROJECT MGR.

Date

June 30, 2005

Supervisor

(signature) *HAK CHO*

(print) HAK CHO

(title) Chief, EA Section

(EPA Region of State) Reg 5

Date

6/30/2005

Locations where references may be found: U S EPA offices, 77 W Jackson Blvd., File Room , 7th floor

- 1) August Mack Environmental, Inc., February 14, 2001, Phase I RFI Report, Stewart Warner Corporation, Indianapolis, Indiana.
- 2) August Mack Environmental, Inc., August 28, 2003, Interim Measures Work Plan, Stewart Warner Corporation, Indianapolis, Indiana.
- 3) August Mack Environmental, Inc., December 13, 2004, Interim Measures Report, Stewart Warner Corporation, Indianapolis, Indiana.
- 4) August Mack Environmental, Inc., February 8, 2005, Phase II RFI Report, Stewart Warner Corporation, Indianapolis, Indiana.
- 5) August Mack Environmental, Inc., May 10, 2004, Status Report #9, Stewart Warner Corporation.
- 6) Eli Lilly & Company, November 2, 1999, Letter with Attachments Regarding Lilly NPDES issues and Stewart Warner Corporation site, Indianapolis, Indiana.
- 7) Indiana Department of Environmental Management, Risk Integrated System of Closure (RISC), Default Closure Tables, July 14, 2003.
- 8) Mundell & Associates, June 3, 1999, Limited Subsurface Investigation, Building Number 358, Lilly Technology Center, Indianapolis, Indiana.
- 9) Mundell & Associates, February 18, 2005, Groundwater Flow and Constituent Transport Modeling Study, Stewart Warner Corporation, Indianapolis, Indiana.
- 10) U.S. EPA Region 9, Preliminary Remediation Goals, October 1, 2002.
- 11) U.S. EPA, November 2002, Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soil.
- 12) U.S. EPA, August 15, 2003, RCRA Section 3008(h) Second Modified Administrative Order, Stewart Warner Corporation.

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FINAL NOTE: THE HUMAN EXPOSURES EI IS A QUALITATIVE SCREENING OF EXPOSURES AND THE DETERMINATIONS WITHIN THIS DOCUMENT SHOULD NOT BE USED AS THE SOLE BASIS FOR RESTRICTING THE SCOPE OF MORE DETAILED (E.G., SITE-SPECIFIC) ASSESSMENTS OF RISK.

Facility Name:	<u>Stewart Warner Corp.</u>
EPA ID#:	<u>IND 005 213 715</u>
City/State:	<u>Indianapolis, Indiana</u>

CURRENT HUMAN EXPOSURES UNDER CONTROL (CA 725)

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CURRENT HUMAN EXPOSURES UNDER CONTROL (CA 725)